DOCUMENT RESUME

ED 441 950 CE 080 188

AUTHOR	Mikulecky, Larry
TITLE	Developing and Teaching in Workplace Literacy Programs.
PUB DATE	2000-05-03
NOTE	11p.; Paper presented at the Annual Meeting of the International Reading Association (Indianapolis, IN, May 3, 2000).
PUB TYPE	Information Analyses (070) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Adult Basic Education; Adult Literacy; Adult Students; Curriculum; *Curriculum Development; *Education Work Relationship; *Educational Needs; *Educational Research; Literacy Education; On the Job Training; *Reading Instruction; *Workplace Literacy

ABSTRACT

Three areas of research are particularly important for educators concerned with literacy in the workplace. The areas are the following: (1) the National Adult Literacy Survey results that show that for many workers there are gaps between tested literacy abilities and the new literacy demands present in the most promising jobs; (2) 2 decades of studies that demonstrate the benefits of functional context literacy instruction, which matches instruction to settings and materials with which learners have daily contact; and (3) several detailed case studies that focus upon the dangers inherent in simplistic approaches to designing workplace literacy instruction. The implications of this research for educators are that there is a broad population in need of support to handle the literacy requirements of the new workplace, that there is a need for multi-level programs, and that learners should be involved in planning their instruction. (Contains 11 references.) (KC)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 441 950

L. Mikulecky

2A

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Developing and Teaching in Workplace Literacy Programs

Larry Mikulecky
Indiana University-Bloomington
International Reading Association Convention
May 3, 2000
Indianapolis, Indiana
Mikuleck@Indiana.edu (812) 856-8277

There are three areas of research which are particularly important for educators concerned with literacy in the workplace. These are:
1) The National Adult Literacy Survey results which reveal for many workers gaps between tested literacy abilities and the new literacy demands present in the most promising jobs;
2) Two decades of studies which reveal the benefits of functional context literacy instruction which matches instruction to settings and materials with which learners have daily contact; and
3) Several detailed case studies which focus upon the dangers inherent in simplistic approaches to designing workplace literacy instruction.

The National Adult Literacy Survey

In the early 1990's, the National Adult Literacy Survey tested and interviewed over 26,000 adults on their literacy capabilities and practices (Kirsch et al, 1994). Of those interviewed, nearly 21,000 reported some form of employment. Significant percentages of workers in nearly every job category reported having to regularly write as part of their jobs. The table below focuses upon the percentages of employees in various occupations who frequently write memos and reports or fill in forms.

Percentages of Workers in Major Occupational Categories Reporting Frequent (2x/week or more) Writing of Materials

Occupation	Memos	Reports	Form-filli
Managerial	89	64	74
Professional	74	49	43
Technical	65	48	49
Sales	56	33	55
Clerical	73	47	64
Service	36	23	27
Farming	27	12	28
Crafts	47	33	43
Machine Operative	33	22	27
Transp. Operative	44	35	50
Laborer	26	15	27

Surprisingly high percentages of workers report that they frequently write on the job. It is also possible to examine writing practices in terms of percentages of workers

BEST COPY AVAILABLE

CE080188

who report never writing. Only 24% of workers report never writing memos and 36% never writing reports (Mikulecky, 1998).

The National Adult Literacy Survey also provides a stark picture of the relatively large percentages of adults who have difficulty with all but the most basic literacy demands. To give some idea of the gap between the need for skills in the workplace and the actual skills of workers, consider the survey results.

The more than 26,000 adults who participated in the two hour survey were asked to respond to realistic scenarios and materials of varying difficulty. Then, the percentage of adults correctly completing various prose, document, and quantitative tasks was used to establish task difficulty ratings along a 0-500 scale. This scale was broken into five levels, with level one being the lowest and five the highest. The item anchoring procedure allows the test designers to present items associated with various difficulty levels. For example, a person scoring below 149 on the prose scale would have a low probability of consistently locating details like the name of a country in a short newspaper article. Scoring below 170 on the document scale indicates not being able to consistently locate details like the expiration date on a driver's license. Below 191 on the quantitative scale indicates a high probability of not being able to accurately and consistently compute a fairly simple set of figures like those on bank deposit. Any score between 0-225 is reported as being in Level 1, the lowest of five proficiency levels on the National Adult Literacy Survey. Level 2 scores range from 226-275. Items that represent tasks within Level 2 are listed below along with the difficulty scores of the items.

Sample Level 2 Items

Prose	250	Locate two features of information from sports article.
	275	Interpret instructions from an appliance warranty.
Document	230	Locate an intersection on street map.
	259	Locate and enter background information on an application a social security card.
Quantitative	238	Calculate postage and fees for certified mail.
	270	Calculate total costs of purchase from an order form.

The literacy and computational demands of changing workplaces and of retraining tend to be higher than Level 2. In fact, new technological and information processing demands appear to have made many jobs more complex since the NALS survey was done (Mikulecky & Kirkley, 1998). In other words, workers whose literacy abilities "top-out" at Levels 1 and 2 are candidates for literacy skills instruction if they must train for new higher skill jobs, retrain for evolving current jobs, or simply be able to handle the increasing difficulty of literacy skill demands of restructured jobs created by technological and organizational changes.

Among respondents to the National Adult Literacy Survey, nearly 21,000 individuals answered questions about their previous and current employment. Responses were coded using the US. Census Bureau's 1990 Occupational Classification system which includes several hundred occupational categories. Average proficiencies of workers in most occupational areas tend to be either at Level 3 (276-325) or the very low end of Level 4 (326-375). The examples below provide some concrete sense of tasks which could be performed accurately and consistently by workers in the top 50%-60% of those taking the test.

Sample Level 3 Items

Prose	288	Write a brief letter explaining a credit card bill error.
	316	Read a lengthy article to identify two behaviors that meet a stated condition.
	328	State in writing argument made in lengthy news article.
Document	298	Use a nursing home sign-out sheet to respond to a call
	323	Enter information given into auto maintenance form.
Quantitative	278	Use a calculator to calculate difference between regular and sale price from an advertisement.
	321	Calculate miles per gallon using information on a mileage record chart.
	331	Determine correct change using information in a menu.

In many occupations, however, more than half of workers performed below the national average. For example, average proficiencies below Level 3 were found for the following job classifications: laborer, service, farming, forestry, fishing, craft, machine operative, and transportation operative. In addition, even in many occupations with Level 3 averages, from 20%-40% of workers scored at Levels 1 and 2. Nevertheless, many workplace basic skill demands are comparable to higher survey items (i.e. Level 3 or higher). This gap between large percentages of workers scoring in the lower two levels and demands in the higher levels is cause for concern.

The survey information should not be construed to mean that the country is filled with illiterates in the sense of adults unable to ever read any print. Most of the 1 in 5 adults who demonstrated proficiencies at Level 1, the lowest level of the NALS, could read and write some simple material, some of the time. The probability estimates are, however, that most would be unable to consistently and without help do tasks similar to many quite simple literacy and computational tasks called for in today's workforce (i.e. locating, summarizing and entering key verbal and numerical information on documents and forms).

In high performance workplaces, where heightened training and information processing requirements abound, job demands are roughly comparable to Level 3

tasks on the NALS. Consequently, both the 20% of adults in Level 1 and the next quarter of adults who score within the Level 2 category are likely to experience difficulty with Level 3 tasks like explaining problems in writing, interpreting unfamiliar written instructions, and using graphical displays like maps and complex charts.

Moreover, for every occupational area, some individuals performed within Level 1, the lowest level. The percentages range from 1 to 3 percent of teachers and other professionals, to some very high percentages in the health support occupations (13 to 18 percent). Approximately 10 percent of sales personnel also perform at the lowest level while the percentages of clerks and secretaries at the lowest level range from 5 to 8 percent.

More to the point is the fact that for occupations calling for a good deal of paperwork and information processing (i.e., health support, sales, clerical, and secretarial), many workers seem unable to comprehend and produce moderately simple materials (i.e., combined Levels 1 and 2). Approximately 40 percent of health support personnel and sales personnel perform at Levels 1 or 2 while approximately 30 percent of clerks and secretaries perform at these levels. Again, performing at or below Level 2 does not mean that one is totally illiterate. It does mean, however, that being able to independently and consistently communicate in written form and comprehend most written training information is likely to be very difficult.

The problem is not simply the lack of educational opportunity. Thousands of graduates from 2-year colleges were part of the NALS sample. A typical graduate has had 12 years of high school education plus two years work toward a two-year degree. Nearly 25% of these graduates scored at the two lowest levels of the NALS. Many students graduate from high school and then from post-secondary education without being able to do the sorts of writing and reading called for in the new workplace.

Functional Context Education

Thomas Sticht (1987) introduced a conceptual framework he labeled "Functional Context Education" to describe an approach to basic skills education which advocates constructing learning activities using materials and tasks which learners encounter daily -- usually on the job. This framework grew out of two decades of military research which demonstrated that such an approach improved literacy skills related to occupational tasks and also transferred to more general literacy gains. Comparable amounts of general literacy instruction were not shown to transfer to improved abilities with specific occupational literacy tasks. This pattern appeared repeatedly in military occupational studies with cooks, automotive repairers, medical assistants, supply clerks, and electronics training. Similar findings were reported in the civilian sector by Haigler (1990), Hargroves (1989), Philippi (1990) and Mikulecky & Lloyd (1997).

Though much of the research related to Functional Context Education is workplace based, the conceptual framework is not limited to occupational training. In fact, Sticht (1999) has recommended the framework for family

literacy programs where it has been employed with literacy tasks related to parenting. The approach has also been employed with materials used for daily activities in the home, for religious participation, and for personal hobbies.

Some programs mix job-related materials with other literacy materials used by learners for hobbies, religion, and child-rearing. Some even provide literacy support for other academic classes. In a survey of 121 workplace literacy programs, 43% reported a major or solitary program goal of improving work related literacy skills. Another 45% of these workplace literacy programs reported a combination of job-related and general skills goals (Mikulecky, Lloyd, Horwitz, Masker & Siemantel, 1996). A functional context literacy program with both general skills goals and work skills goals employs a matching mix of materials.

Literacy instruction can be linked to the learner's daily functional context in several ways. Some program designers interview learners and others to determine the sorts of literacy tasks learners encounter and have difficulty performing. Observation and think-aloud sessions with experts at performing these tasks can produce a clearer understanding of the literacy strategies, vocabulary, special knowledge, and materials required to successfully perform tasks. This process can serve as a foundation for developing custom-designed learning activities. The analysis can also help program designers and instructors in selecting appropriate off-the-shelf learning materials. Chapter three of Developing and Evaluating Workplace Literacy Programs provides some guidelines and examples for how to do such custom designing (Mikulecky, Lloyd, Kirkley & Oelker, 1996).

My colleagues and I recently studied several different workplace literacy programs in part to determine how much functional context education was required to demonstrate significant improvement in workplace tasks. The programs had all received some federal funding and had been identified as effective using several different indicators. We used observations, interviews with learners and instructors, curricular materials, planning documents and custom-designed tests to examine the impact of instruction upon 180 learners in 10 different classes in a variety of workplace settings (Mikulecky & Lloyd, 1997). One of the questions we addressed was:
What intensity of several instructional practices (such as reading/writing practice, use of workplace examples, discussion of literacy processes, discussion of literacy self-efficacy, and discussion of future plans) did classes need to incorporate for learner gains to occur? Among the findings were the following:

1. Use of the vast majority of class time for literacy practice was important. Learners in programs spending more than 70% of course time reading and writing had a mean gain over three times that of the other learners in terms of expanded sophistication of literacy strategies.

2. Significant workplace literacy improvement didn't come without practice using workplace materials.

Learners who used workplace examples in class more than 20-30% of the time demonstrated gains in workplace literacy abilities of nearly twice that of learns using workplace linked materials less often.

3. Changing learner attitudes and educational goals required regular, planned, brief discussion.
Learners who had regular brief, planned discussions about their own literacy improvements as well as future educational options demonstrated gains in reading scores which were nearly three times that of the other learners. They also significantly outperformed other learners in terms of developing more concrete educational plans and developing a stronger self-concept about their own literacy abilities.

Dangers in Using a Narrowly Defined Functional Context Approach
Researchers such as Gowen (1992) and Hull (1993, 1996) have identified a number of flaws and outright dangers in taking an overly simplified functional context approach. Extensive case studies by these researchers and colleagues have profiled programs which ignore important complexities of the workplace.

Gowen's (1992) book length case study of a workplace literacy program in a hospital describes program attempts to construct workplace materials based on official job descriptions and official guidelines for how entry level hospital workers were to do their jobs. In one case, guidelines for how janitorial staff were to retrieve used needles from waste cans might have endangered the workers if the guidelines had actually been followed. This was in part due to the fact that doctors and nurses sometimes violated other guidelines by placing needles point-up in waste containers. In addition, Gowen's observations and interviews revealed that many workers sought literacy support for goals outside the workplace and reacted negatively to only being offered literacy training for jobs they wished to move beyond.

Glynda Hull and her colleagues have done a series of studies of workplaces and workplace literacy programs which try to capture the complete work context. In a study of a community college program designed to prepare learners for banking occupations, Hull (1993) found that there was little match between the approaches used in classes and what was called for in actual jobs. In addition, the positions learners were being prepared for in the bank's data center were sometimes only temporarily available to them. In a later study of workers in a plant which did circuit board assembly, Hull et. al (1996) found a significant range of literacy activities. Some of these workers needed to do individually, but others were collaborative and allowed workers to help and teach each other. In one worker case study, Hull found that most of the sometimes complex literacy activities involved workers monitoring themselves with little decision-making power. The literacy skills needed for performing jobs did not seem to transfer to the skills needed for promotion to more desirable supervisory positions.

What Does This Mean for Educators?

The National Adult Literacy Survey data suggests that there is a broad population in need of support with the literacy requirements of the new workplace. In addition to workers who haven't completed high school, many occupations include high school graduates and even students at two year institutions of high education who are unable to successfully complete middle range literacy tasks such as those in restructured workplaces.

Need for Multi-level Programs: This suggests a need for multi-level programs which can address very basic skills as well as provide support for learners possess basic skills but need help with new training classes and new skills being called for in the workplace. Educational paths which begin with basic skills instruction and continue through supported on-going training for new jobs is one way to do this. Workplace programs which make connections with community colleges and vocational colleges can most easily manage such educational paths.

Involve Learners in Planning Instruction

The dangers of ill-planned workplace programs which have been revealed by Gowen, Hull, and others make it clear that some form of checks and balances needs to be built into workplace literacy programs. Job descriptions and documentation provided by management can be helpful, but cannot tell the full story of what literacy tasks look like in actual practice. In addition, instruction which focuses only on current jobs may do a disservice to learners who have other personal and literacy goals. There are several ways in which learners can play key roles in helping to make sure the education they get is useful and matched to their own goals. They are these:

1) Have learners help in gathering workplace materials and in preparing simulations and descriptions of job tasks. At the very lowest level, this can include developing work-based language experience stories and gathering key vocabulary terms. At slightly more advanced levels, learners can help prepare "realistic" guidelines and advice for how to perform tasks and can work collaboratively to teach each other. Some learners can develop work-related journals which include ideas for how to improve their work situations. Others can help develop work-based simulations, role-plays, and job-aids. Materials developed through these activities can sometimes be used on the job and shared with program funders.

2) Develop programs which balance work goals with other learner goals. Though employers and tax-payers may fund programs, learners also invest a significant amount of time and mental energy. Unless they see that what they are learning is to their benefit, it is unlikely that they will put in the time and effort needed for anybody to gain much of anything from these programs. Many programs already include a mix of activities which address both workplace and non-workplace learner goals. More programs should expand in this direction. Developing about half of learning activities which relate to personal goals and career paths beyond current jobs is a good way to accomplish this mix. It is also

a way to ensure that programs increase learner choices rather than trap learners in jobs they may wish to go beyond. Other connections beyond the workplace can include family literacy activities and support as well as preparation for retirement.

3) Treat learners as adults by providing them with supportive but honest views of the challenges they face. In some cases learners can be encouraged to expect relatively quick success. This can happen if learner goals are simple and close at hand (i.e. support for a class they are taking or help with doing a particular job or home task). In many other cases, however, learners should be told that their goals will require hard work for quite some time, perhaps hundreds of hours requiring a good deal of practice and effort away from classes.

References

Gowen, S. (1992). The politics of workplace literacy: A case study. New York: Teachers College Press, Columbia University.

Haigler, K. (1990) The Job Skills Education Program: An Experiment in Technology Transfer for Workplace Literacy A discussion paper prepared for the Work in America Institute, Harvard Club, New York, June 1990.

Hargroves, J. (1989) The basic skills crisis: One bank looks at its training investment. New England Economic Review, September/October, 1989, pp.58-68.

Hull, G. (1993). Critical literacy and beyond: Lessons learned from students and workers in a vocational program and on the job. Anthropology and Education Quarterly, v. 24, n4, 373-396.

Hull, G. Jury, M., Ziv, O. & Katz, M. (1996). Changing work, changing literacy? A study of skill requirements and development in a traditional and restructured workplace. (Final Report). National Center for Research in Vocational Education and Center for the Study of Writing and Literacy. Berkeley, CA: University of California.

Kirsch, Irwin ,, Jungeblut, Ann, Jenkins, Lynn & Kolstad, Andrew (1994). Adult literacy in America. Princeton, NJ: National Assessment of Educational Progress at Educational Testing Service.

Mikulecky, L., Lloyd, P., Kirkley, J. & Oelker, J. (1996).Developing and Evaluating Workplace Literacy Programs: A Handbook for Practitioners and Trainers. Philadelphia, PA: National Center on Adult Literacy.

Mikulecky, L., Lloyd, P. Horwitz, L., Masker, S. & Siemantel, P. (1996) A Review of Recent Workplace Literacy Programs and a Projection for Future Changes. Philadelphia, PA: National Center on Adult Literacy.

Mikulecky, L. & Lloyd, P. (1997). Evaluation of workplace literacy programs: A profile of effective instructional practices. Journal of Literacy Research, v. 29, n4, 555-586.

Sticht, T. (1987). Functional context education: Workshop resource handbook. San Diego, CA: Applied Behavioral & Cognitive Sciences Inc. Also available as ERIC as an Document -- ED 342878

Sticht, T. (1999). Adult Basic Education: Strategies to Increase Returns on Investment. ERIC document, ED 432 672.